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Abstract

The effect of glutamine supplementation on Adiponectine and TNF-α concentration after exhaustive exercise in young male

Background and objective:Glutamine is one of the nutritional supplements that have anti-inflammatory effects and is also the most abundant amino acid found in plasma and skeletal muscle. It can be beneficial to athletes due to its anti-inflammatory and antioxidant effects. Therefore, the present study was designed to investigate the effect of glutamine supplementation on serum levels of adiponectin and TNF-α after exhaustive exercise in young male.

Methods: In an intervention study, 30 healthy males (case =15 and control=15) were randomly assigned into two groups.The intervention group received 0.3 grams of glutamine per kg body weight per day, with 25 grams of sugar in 250cc water and control group received 25 grams of sugar per 250 cc water for 14 days. At the end of the second week, a fasting blood sample was taken. Also, blood samples were taken before and after intervention and after an exhaustive exercise. Data were analyzed using a t-test for independent groups and paired t-test at a significant level of $p \leq 0.05$.

Results:The mean of adiponectin, TNF-α, total antioxidant capacity increased after two weeks of glutamine supplementation in the intervention group and this difference was statistically significant ($p \leq 0.05$)and Also, the mean serum levels of malondialdehyde decreased significantly in the intervention group ($P= 0.001$). After two weeks of glutamine supplementation, the mean of hs-CRP in the intervention group was not significantly decreased ($P= 0.982$). After two weeks of supplementation of glutamine and after exhaustive exercise, the mean of adiponectin and total antioxidant in the intervention group was higher than the control group ($p \leq 0.05$). Also after an exhausting exercise, the mean of malondialdehyde and mean of hs-CRP in the intervention group were lower than the control group and this difference was significant ($p \leq 0.05$).

Conclusion: Glutamine supplementation for two weeks increased the body's antioxidant capacity. Antioxidant effects can be achieved by improving the levels of adiponectin. Glutamine also controls inflammatory factors that can be reduced by reducing TNF-α.

Keywords:
Glutamine, Oxidative stress, inflammatory factors, Exhaustive exercise, TNF-α, Adiponectin